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10/541,032

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Isao Nishimura

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EXAMINER

JOHNSON, CONNIE P

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/14/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/541,032

**Applicant(s)**

NISHIMURA ET AL.

**Examiner**

CONNIE P. JOHNSON

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date 9/16/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. The remarks and amendment filed 6/30/2008 have been entered and fully considered.
2. Claims 1-20 are pending.
3. Claim 3 is amended.
4. Claims 13-20 are new.

***Election/Restrictions***

5. Newly submitted claims 15-20 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 1-14 are drawn to a radiation-sensitive composition and claims 15-20 are drawn to a method.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 15-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 6-9 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al., U.S. Patent Publication No. 2001/0026901 A1.

Maeda teaches a photoresist composition comprising a polymer and a photoacid generator. The polymer comprises a recurring group as in formula (2) of Maeda on page 2. The recurring group comprises an alicyclic group with a lactone structure. The polymer also comprises a recurring group with an acid-labile group attached. Maeda shows the acid-labile group as R<sub>4</sub> in formula (2). In examples 18, 24 and 25 Maeda teaches the polymer has a ratio of weight average molecular weight to a number average molecular weight of 1.45, 1.4 and 1.5, respectively. The difference between the present application and the prior art is that Maeda does not teach the ratio of weight average molecular weight to a number average molecular weight is 1.0 to 1.3. However, as shown above, the reference does teach 1.4 which is extremely close in range and the result would be expected to be the same, absent any evidence to the contrary.

*"A prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985)" (MPEP 2144.05).* Therefore, it would have been obvious to one of ordinary skill in the art that the polymer of Maeda comprising a recurring unit of formula (2) would be expected to have the same properties and perform in the same manner as the presently claimed polymer. The polymer that is used in the photoresist composition is obtained by polymerization with a radical polymerization initiator (page 7, [0040]). The recitation in present claim 1, that

the acid-labile group-containing resin is "polymerized with a living radical polymerization initiator," is a process limitation and does not add positive recitation to the claim. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (MPEP 2113). Maeda also teaches a triphenylsulfonium salt compound as the photoacid generator in the composition (page 7, [0044]).

8. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa et al., U.S. Patent No. 6,416,928 B1 in view of Nozaki et al., EP 1184723 A2.

Ohsawa teaches a chemically amplified resist composition comprising a polymer resin with an acid-labile group and a photoacid generator. The polymer becomes alkali soluble by the action of an acid. In column 16, formula (2a') shows a recurring unit wherein group  $OR^{6a}$  is an acid-labile group. Substituent  $OR^{6a}$  may comprise an alicyclic group as in substituent formula (7) in column 17. When formula (7) is used, two of the  $R^2$  groups in formula (1) of claim 1 form an alicyclic group. The polydispersity of the recurring units with an acid-labile group is preferably less than 1.5 (col. 15, lines 48-49). Ohsawa also teaches that the acid-labile recurring unit is present in an amount of up to 50mol% (col. 16, line 3-16). The recitation in present claim 1, that the acid-labile group-

containing resin is "polymerized with a living radical polymerization initiator," is a process limitation and does not add positive recitation to the claim. In addition, the limitation of claim 5 wherein the acid-labile group containing resin is produced by random polymerization is a process limitation and has no patentable weight. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In *Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (MPEP 2113). The photoacid generators comprise a (4-tert-butylphenyl)diphenylsulfonium salt (col. 10, 57-58). Ohsawa also teaches a basic component to suppress the rate of diffusion when the acid generated by the photoacid generator diffuses within the resist film (col. 42, lines 30-35). Ohsawa does not teach that the recurring units in the polymer comprise formula (2) of claim 2.

However, Nozaki teaches a resist composition comprising a photoacid generator and a film forming polymer with an alkali-soluble group (page 7, [0031-0032]). The polymer preferably has a norbornyl alicyclic group in the recurring unit (page 7, [0033]). The norbornyl alicyclic group controls alkali-solubility in the resist composition (page 8, [0035-0036]). Example 23 of Nozaki teaches formula (2) of claim 2 as a recurring unit of the polymer. Nozaki also teaches that the norbornyl alicyclic group is present in an amount of 5 to 95mol% (page 8, [0037]). It would have been obvious to one of ordinary

skill in the art to use the norbornyl alicyclic group of example 23 in Nozaki in the composition of Ohsawa to maintain alkali-solubility in the resist composition as required by Ohsawa (Ohsawa, col. 4, lines 8-17).

### ***Response to Arguments***

9. Applicant's arguments, filed 6/30/2008 with respect to the rejection(s) of claim(s) 1, 2, 3 and 5 under 102(b), claims 1-5 and 9-11 under 103(a), claims 1, 6 and 8 under 103(a) and claims 1, 7 and 12 under 103(a) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, new ground(s) of rejection are made herein.

10. Applicant argues that the provisional election of formula 2 of claim 2 is made with traverse because the search and identification of all species identified would not pose an undue burden on the Examiner.

Examiner acknowledges that the election of formula (2) in claim 2 is with traverse. The search and examination of all species in claim 2 would pose an undue burden on the examiner because the formulas (2)-(7) each comprise different substituent groups corresponding to R<sup>2</sup> of the generic formula.

11. Applicant argues that the examples 18, 24 and 25 of Maeda only teach the recurring unit in present claim 1 and not formula (2) in present claim 2.

Applicant is directed to page 11 of applicant's specification, wherein formula (2-1-1) is exemplified as an example of formula (2) in claim 2 of the present invention. The

examples 18, 24 and 25 teach the same recurring unit. Therefore, Maeda certainly teaches formula (2) of claim 2.

12. Applicant argues that the resin in the composition of Maeda is not polymerized with a living radical polymerization initiator.

The limitation in claim 1, that the acid-labile group-containing resin is "polymerized with a living radical polymerization initiator," is a process limitation and does not add positive recitation to the claim.

13. Applicant argues that Ohsawa does not teach that the resin is formed by polymerization with a living radical polymerization initiator.

The limitation in claim 1, that the acid-labile group-containing resin is "polymerized with a living radical polymerization initiator," is a process limitation and does not add positive recitation to the claim.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Connie P. Johnson  
Examiner  
Art Unit 1795

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795